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Part IV

Water Resources Council

Biomass-Ethanol Commercial Project, South Point, Ohio; Section 13(c) Water Assessment

WATER RESOURCES COUNCIL

Biomass-Ethanol Commercial Project, South Point, Ohio; Section 13(c) Water Assessment

AGENCY: United States Water Resources Council.

ACTION: Notice of water assessment report for public review and comment.

SUMMARY: This notice incorporates the water assessment report prepared by the Water Resources Council under the provisions of Section 13(c) of the Federal Nonnuclear Energy Research and Development Act of 1974.

DATE: Comments on this report are due on or before November 3, 1981. A 90-day comment period is provided by law; however, because the Water Resources Council will be terminated September 30, 1981, the staff will not have time to respond to and formally incorporate comments into the official WRC analysis submitted to the Secretary of Energy. Interested persons are, therefore, urged to submit comments before September 1, 1981.

Reference for comments. This summary report only highlights important aspects of the contractor's full technical report. Therefore, reviewers should use the full technical report for comment. For copies of the technical report contact: Ronald L. Scullin, U.S. Water Resources Council, 2120 L Street, NW., Washington, DC 20037, phone: 202/254–6352.

ADDRESS: Send comments to: Gerald D. Seinwill, Acting Director, U.S. Water Resources Council, 2120 L Street, NW., Washington, DC 20037.

FOR FURTHER INFORMATION CONTACT: Ronald L. Scullin, Staff Specialist, U.S. Water Resources, Council, 2120 L Street, NW., Washington, DC 20037, phone: 202/254–6352.

Dated: July 31, 1981.

Gerald D. Seinwill,

Acting Director.

I. Preface

The U.S. Water Resources Council (WRC) staff has prepared this summary report under the provisions of paragraph (c) of Section 13 of the Federal Nonnuclear Energy Research and Development Act of 1974, as amended. The report is the result of a water assessment for a proposed commercial biomass-ethanol project at South Point, Ohio. The objectives of the assessment were to reach findings and recommendations on water availability to meet project requirements and to evaluate the related environmental, social, and economic impacts associated with dedicating water to the project use.

The U.S. Department of Energy requested WRC to perform this assessment on November 4, 1980. WRC negotiated a contract with the Ohio Department of Natural Resources (ODNR), Division of Water, to conduct the water assessment with guidance from WRC. Also working with ODNR on the technical phases of the assessment were an engineering firm representing the project's industrial partners, the Ohio Environmental Protection Agency, Ohio River Valley Water Sanitation Commission, U.S. Geological Survey, and the U.S. Army Corps of Engineers. Findings of the assessment were then published by the ODNR in the technical report titled: *South Point Gasohol Project, Ohio: A Water Assessment Study.* The technical report, completed July 1981, is the principal supporting document used by WRC staff to prepare this summary report. Copies of the ODNR technical report are available on request from the U.S. Water Resources Council.

Publication of the water assessment in the **Federal Register** is mandated under the provisions of Section 13 to enable public review and comment during a 90-day period. WRC staff will anlayze the comments received and will revise the report as appropriate. WRC will forward the comments, the WRC analysis, and the final water assessment report to the Secretary of Energy.

II. Project Overview

The proposed coal-fired plant at South Point, Ohio, will annually produce 60 million gallons of ethanol from corn. Nine parts of unleaded gasoline added to one part of the ethanol product by distributors or dealers will amount to 600 million gallons of gasohol annually. The plant will utilize 24 million bushels of corn and 180,000 tons of coal per year as raw materials in the grain alcohol process. Transport of raw materials and finished product is expected to be served by rail and truck. Barge transport may be considered in the future.

The 600-acre project area was formerly used by a commercial fertilizer plant. Existing facilities, including groundwater wells, will be incorporated into the project design and operation.

Figure 1 illustrates the location of the project near the Village of South Point, Ohio, at mile 318.5 of the Ohio River.

III. Summary of Findings

The following findings summarize assessments of project water requirements, water availability, water resources impacts, and enviromental and socioeconomic effects of water use by the proposed biomass-ethanol project.

Water Requirements

The proposed biomass-ethanol plant will use approximately 23,400 gallons per minute (gpm) or 34 million gallons per day (mgd) of water in the ethanol production process. About 80 percent of this water, 18,900 gpm (27.5 mgd), will continuously circulate through the plant's cooling system. Contingent on safe aquifer yield determination, the remaining water demand of 4,500 gpm (6.5 mgd) will be pumped from existing and proposed groundwater wells on-site.

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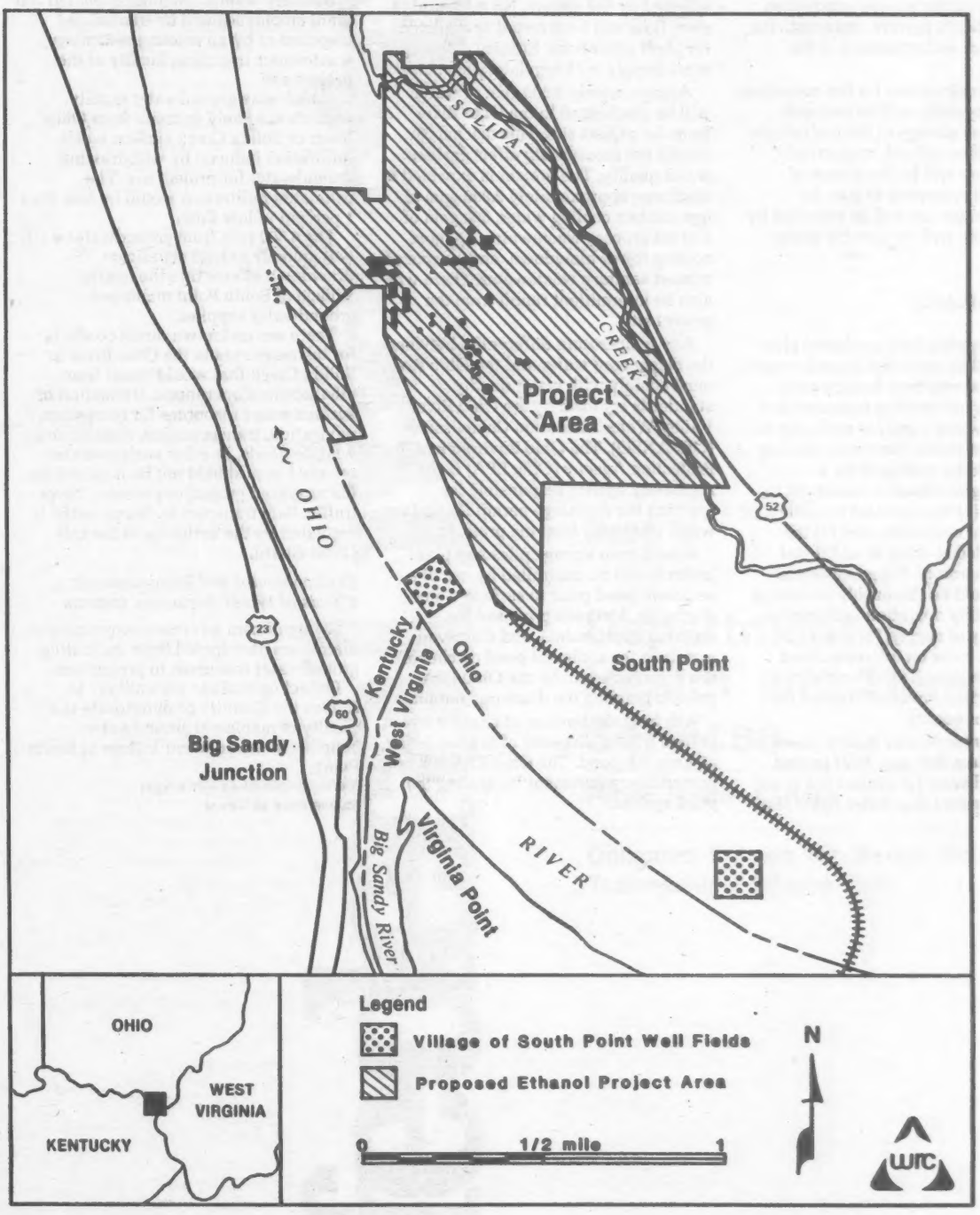
Figure 1
Location of Project



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This water will initially be used as once-through, noncontact cooling water prior to use elsewhere in the plant. Approximately 900 gpm, or about 20 percent of the groundwater withdrawn, will be lost to evaporation and other factors during the ethanol production process. This 20 percent represents the consumptive water demand of the project.

Water requirements for fire protection and surge systems will be met with existing tank storage of 500,000 gallons and 1.2 million gallons, respectively. Groundwater will be the source of supply. The estimated 13 gpm for domestic water use will be provided by a new on-site well for potable water supply.

Water Availability

Water supplies for the ethanol plant process will be provided through on-site groundwater resource development. Preliminary information indicates that the groundwater supply is sufficient to meet project needs. However, existing wells should be evaluated by a competent groundwater consultant to determine: (1) their present condition, (2) their present capacities, and (3) the recommended spacing of additional wells. Furthermore, the groundwater system should be thoroughly evaluated prior to facility operation to determine: (1) longevity of supply, (2) impact of withdrawal rates on interconnected surface waters, and (3) effects of induced surface water infiltration on groundwater quality.

Present groundwater quality poses no major problem that may limit project use. Groundwater for project use is not restricted under Ohio water rights law.

Surface water from the Ohio River or Solida Creek is not currently proposed for project use.

Water Resources Impacts

Surface water quality will not be affected by the project. No measurable river flow will be diverted or depleted for plant operations. Effluent discharges must comply with regulatory agencies.

Approximately 3,600 gpm of water will be discharged to the Ohio River from the project site. This discharge should not measurably affect surface water quality. The project is expected to discharge approximately 2,830 gpm of non contact cooling water, 500 gpm of treated process wastewater, 270 gpm cooling tower blowdown, and 13 gpm of treated sanitary wastewater. There will also be intermittent runoff from the project site.

Any temperature differential between the discharged water and the Ohio River must comply with water quality standards set forth by the Ohio River Valley Water Sanitation Commission (ORSANSO). The Ohio Environmental Protection Agency (Ohio EPA) is the regulatory agency responsible for granting the discharge permit for surface water discharge from the project site.

Runoff from storage piles and plant grounds will be controlled by use of a sediment pond prior to surface water discharge. Methods proposed for controlling pH, solids, and dissolved metals in the sediment pond discharge are to be reviewed by the Ohio EPA prior to granting the discharge permit.

Ash from the burning of coal for steam boilers will be disposed of in an existing 25-acre ash pond. The Ohio EPA has no immediate requirement for sealing the pond system.

Although most of the processed solid wastes from the ethanol process will be marketed for use as animal feed, some treated residual wastes will be disposed of in the project site. The Ohio EPA must approve the disposal technique.

Sanitary wastes from the expected 200 plant employees will be treated and disposed of by an existing secondary wastewater treatment facility at the project site.

No adverse groundwater quality impacts are likely to result from Ohio River or Solida Creek surface water infiltration induced by withdrawing groundwater for project use. The estimated infiltration would be less than 1 percent of low flow.

The 4,500 gpm from groundwater wells will unlikely extend significant drawdown effects into the nearby Village of South Point municipal groundwater supplies.

There are no known direct conflicts for instream uses in the Ohio River or Solida Creek that would result from ethanol plant operations. Utilization of surface water resources for recreation, navigation, transportation, aquatic and wildlife needs, or other surface-water oriented uses should not be imparied by the proposed project or potential barge traffic. Safe transport by barge traffic is regulated by the authority of the U.S. Coast Guard.

Environmental and Socioeconomic Effects of Water Resources Impacts

No significant adverse environmental effects are anticipated from dedicating groundwater resources to project use.

Project operations are unlikely to reduce the quantity or deteriorate the quality of municipal groundwater supplies in the adjacent Village of South Point.

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